Volume 1 1979 Number 3

MARYLAND ENTOMOLOGIST

MARYLAND ENTOMOLOGICAL SOCIETY

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The purpose of the Maryland Entomological Society, which was formed in November, 1971, is to promote the science of entomology in all its branches, to provide a meeting place for professional and amatuer entomologists residing in Maryland, the District of Columbia, Virginia, Pennsylvania and Delaware, to issue a periodical and other publications dealing with entomology, and to facilitate the exchange of ideas and information through its meetings and publications.

Membership in the Society is open to all persons interested in the study of entomology. All members receive the Maryland Entomologist and monthly newsletters and/or announcements of meetings. Institutions may subscribe to the Maryland Entomologist but may not become members. Prospective members should send to the Treasurer full dues for the current year, together with their full name, address, telephone number, and special entomological interests.

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Back issues of the Maryland Entomological Society Newsletter (Vols. 1,2,& 3 - 8 nos. each) and the Maryland Entomologist are available, to members, from the Treasurer. The M.E.S. Newsletters are .25¢ per no. and the Maryland Entomologist is $1.00 per copy.

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The Maryland Entomological Society is a non-profit, scientific organization. Meetings are held on the third Friday of every month (from October to May) at 8:00 p.m., in room 403 of the Biological Sciences Building, University of Maryland Baltimore County.

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Cover illustration: The logo of the Maryland Entomological Society features the Maryland Shield and a specimen of Euphydryas phaeton (Drury), the Baltimore Checkerspot, which became the official insect for the state of Maryland through the efforts of many of the members of this Society.

THE 1977 FIELD TRIP OF THE MARYLAND ENTOMOLOGICAL SOCIETY

Philip J. Kean

In past years, our Society-sponsored collecting trips have usually been conducted in June since this is the month following our last regular meeting of the season. This year instead of holding our annual collecting excursion in the early summer, we decided to hold it in the spring. Past experiences proved the early to mid-June period was relatively unproductive, since it fell between major flight periods for the Lepidoptera. In addition to the time change we elected to try a habitat that was different from any that the Society had visited before. So, with nets in hand, we set out on April 30, 1977 for the Green Ridge State Forest region of Allegany and Washington Counties.

Although considerable interest had been expressed in visiting and collecting in the Green Ridge area, attendance for the trip was low. From the Baltimore area were Dr. William Andersen, who suggested the site and organized the trip, Robert Bryant, and myself. From the Washington area were Dr. Douglas Ferguson and Dr. John Carroll. After meeting at our first stop in Frederick, we drove in two cars for the remainder of the trip west. Taking Interstate 70 west past Hagerstown and on to Hancock, we turned off the main road. After traveling several miles through the town and some of the many orchards that dot the area, we arrived at our first collecting site, Seavolt Road, in the southwest corner of Washington County.

From here we travelled and collected along several other country roads in lower Washington and Allegany Counties. Our trek took us through some of the most beautiful countryside in the entire state. The scenery was a mixture of rich deciduous woodlands, sheer wooded cliffs, clear, pristine streams and ponds, spots of coniferous barrens, and sparsly vegetated rock outcrops interspersed with an occasional farm tract or fruit orchard. Large portions of this region of the state are unsuited to agriculture, owing to both the tremendous slopes and to the shallow layers of soil overlaying solid bedrock. About the only crops that can be grown in this type of soil are fruits, and orchards were the only evidence we saw of man's activity in the area. It seems that the character of this area will probably remain the same, unless the potential for residential development increases tremendously.

As far as collecting is concerned, it seemed that we had arrived there just after the peak of the flight season. Even so, a good sampling of the local fauna was obtained. Among the most common species we encountered were the dusky wing skippers. The commonest ones were Erynnis juvenalis (Fabricius) and Erynnis icelus (Scudder & Burgess). Virtually everywhere we looked, we saw individuals of both species flying about and settling on the road surface and warm rocks. Several specimens of both sexes were collected. In the most densely wooded areas in the vicinity of Fifteen Mile Creek, we came upon large numbers of Erynnis brizo (Boisduval & Le Conte). An additional female specimen of a fourth Erynnis spp. was collected by Bob Bryant, but it remains unidentified.

The prize of the day was the capture of a specimen of Pyrgus centaureae wyandot (Edwards) by Bob Bryant, who had most of the luck that day. This capture took place in the Green Ridge State Forest near the Boy's Forestry Camp. We combed this area thoroughly for any signs of the cobweb skipper, Hesperia metea Scudder, since several had been collected at this site ten days earlier by Bob and myself. Unfortunately, their short flight season was apparently over, for none were sighted or collected on this trip.

Also in the area of the Forestry Camp we began to collect bug collectors as well as bugs! It seems that Lee Melton and Richard Smith of the Society set out on their own to collect in the Green Ridge Forest and we met them toward the end of the day at the Boy's Camp. As if that wasn't coincidence enough, we also ran into an out of state collector by the name of Richard Boscoe from Flourtown, Pennsylvania. We apparently are not the only collectors who have heard of the Green Ridge collecting area. Mr. Boscoe had been made aware of the area by Dr. Harry Clench of the Carnegie Museum, who had also addressed our group on the butterflies of the Green Ridge area at one of our regular meetings. We met Mr. Boscoe at the entrance to the Fifteen Mile Creek camping area and he collected with us for the rest of the day.

Of the five species of Papilionidae commonly found within the state, four were collected on this trip. The most common swallowtail

was Papilio glaucus Linnaeus. Several individuals were seen at every collecting site at which we stopped. A large aggregation of them was seen mud-puddling at one spot along Fifteen Mile Creek. When Dr. Andersen tried to take a closer look at them, they scattered everywhere. (At one point it looked as though they could have gotten together and carried him off!) Besides P. glaucus, a few individuals of the zebra swallowtail, Graphium marcellus (Cramer), were also collected. Many consider this species to be North America's most beautiful butterfly. The pale and delicate spring specimens are certainly a joy to behold, whether pinned or flying up and down the wooded ravines of the forest. Unfortunately, only a few were sighted on our trip and they proved hard to capture.

Also rare was Battus philenor (Linnaeus), the blue swallowtail. Only a few of these were collected during the entire day. B. philenor and G. marcellus were not found in large numbers but Papilio troilus Linnaeus was. Although not as common as glaucus, troilus was fairly common in the wooded areas of Green Ridge during our trip. Since both troilus and glaucus also are common along the coastal plain, we only collected a few individuals of each.

Among the Pieridae, only Anthocaris midea Hubner was common. Several males and females were taken at the Boy's Camp, Fifteen Mile Creek. and along Old County Road. Many individuals of Pieris rapae (Linnaeus) were also sighted. The pale, unspotted spring form immaculata was evident, as was the familiar black and white form that we all know and love. Pieris virginiensis Edwards also is known from this area, but we did not encounter it on this trip. The only other pierid collected was a specimen of Euchloe olympia (Edwards). The Colias butterflies were conspicuously absent from the region at the time of our visit. To my knowledge, none was collected and I saw none in flight either.

Six species of Lycaenidae were encountered during the trip. By far the most common was Celastrina argiolus pseudargiolus (Boisduval & Le Conte). This species was numerous along Deneen Road in Washington County. Specimens of both the dark early spring form and the light gray, late spring - early summer form, were collected by almost everyone in just a matter of minutes. Pseudargiolus was quite common but Everes comyntas (Godart) was not. Although comyntas tends to be more common later in the season, at least a few should have been around by the 30th of April. Checking over my records from the trip, I found that I had not taken a single comyntas, nor do I recall anyone else having collected any. As expected, the beautiful silvery blue, Glaucopsyche lygdamus nittanyensis Chermock, was found in a few spots in Allegany County. A couple were seen along Mountain Road and several were collected in the vicinity of Fifteen Mile Creek.

Other lycaenid records include one or two Lycaena phlaeas americana Harris, collected in Washington County, and a couple of the spring form of Strymon melinus humuli (Harris), taken in Allegany County at Fifteen Mile Creek. We also turned up a few Incisalia niphon (Hubner) in some of the pine barrens in the area. Dick Smith had the best catch among the Lycaenidae. Near Fifteen Mile Creek he found a few specimens of Henry's elfin, Incisalia henrici (Grote & Robinson). Henrici is always a rare catch and its occurrence in the Green Ridge region was not known to any of us.

Although several Nymphalidae were collected, none of the species that we encountered were found in any appreciable numbers. The ubiquitous Phyciodes tharos (Drury) was collected at a couple of sites, but its numbers were somewhat lower than expected. One battered specimen of Nymphalis antiopa (Linnaeus) was collected and one or two others were seen along Old County Road in Allegany County. They looked so worn that you might think they had gone through World War III rather than the winter of 1977 (though there are some who believe that the winter of '77 was just about that bad). At least one specimen of Boloria toddi ammiralis (Hemming) was also collected. About the only other nymphalid that was common was Cynthia virginiensis (Drury). Almost as many C. virginiensis were seen as P. tharos. Our lone record of Danaidae consisted of the sighting of a single migrating Danaus plexippus (Linnaeus). We could not collect the specimen as it was at least twenty-five feet above our heads, but its characteristic gliding flight was unmistakable to the three of us who saw it.

Despite the fact that we did not come prepared to do any serious moth collecting, we were fortunate enough to find a few nice diurnal species. The most notable of these were several eight-spotted forester moths, Alypia octomaculata Fabricius. Both males and females of this striking little agaristid were collected. Bob Bryant successfully reared

this species from eggs obtained from a female collected on this trip. Of particular interest was a specimen of the beautiful day-flying noctuid moth, Psycomorpha epimenis Drury. Among the Pyralidae, a single specimen of the grape-leaf roller, Desmia funeralis Hubner, was collected in the vicinity of Seavolt Road.

Our richest harvest among the day-flying moths was in the family Geometridae. Specimens of Heliomata cycladata Grote, Eufidonia discospilata Walker, Bapta semiclarata Walker, and Bapta vestaliata Guenee were collected at various points along the way. Also among the Geometridae was a specimen of Epimecis virginaria Cramer. A road-killed specimen was collected in the vicinity of an opossum carcass. Probably the moth had been feeding on the juices of the decaying animal when it was killed by a passing vehicle.

Collectors are very ingenious people when it comes to improvising: not having any kind of light trap of our own, we sought out one that someone else had set up. The phone company had installed several phone booths along old Rt. 40 which remain lighted all night. So, on the way home, we collected whatever moths we could find in the phone booths. Our take was rather small this time, but we did collect the melanic form (swettaria Barnes & McDunnough) of Amphidasis cognataria Guenee. Also among the Geometridae were Euchlaena spp. and Hydriomena spp. In the family Arctiidae, we picked up a specimen of the fall webworm, Hyphantria cunea Drury. A small nolid moth in the genus Celama also was collected. We were hoping to find additional specimens of the pretty lettered sphinx, Deidamia inscriptum Harris, at the phone booths, as a couple had been collected at these very sites by Bob Bryant and myself only ten days earlier. Their short spring flight season must have been over though, for none were found on this trip.

While the rest of us were busy chasing butterflies, Dr. John Carroll decided to do his collecting the easy way. His specialty is the family Formicidae. Most of his collecting was done under the shade of the trees with a trowel and bottles. If only Lepidoptera could be collected so easily! He took at least twelve different species of ants at various places in Washington County and in the Green Ridge State Forest. Two species of Hypoponera spp. (Ponerinae) were taken, and in the subfamily Formicinae, specimens of Formica spp., Lasius spp., and Paratrechina(Nylanderia) spp. were collected. The rest of the species that were found belonged to the sub-family Myrmicinae. In this group were two different species of Crematogaster, one species each of Stenamma and Leptothorax, and one Pheidole. Also among the Myrmicinae were two different species of Aphaenogaster, the genus of ants that Dr. Carroll had spoken about to our Society earlier in the year.

The spring season is not the best for beetle collecting. Even so, we did come across several good Coleopteran records. The tiger beetles (which over-winter as adults) were found in considerable numbers. They were so thick along Deneen Road in Washington County that they reminded one of a swarm of flying emeralds. Several collected specimens were identified as Cicindela sexguttata Fabricius. This beetle is found commonly throughout the state and is always abundant in Green Ridge, but they seemed especially numerous this year. Along Deneen Road several would take flight with every step one took. More were sighted at other stops along our trek. Collecting at more open roadsides yielded several bumblebee flower beetles, Euphoria inda (Linne). This lively little scarab gets its name from the low-pitched humming sound it makes in flight.

Our best beetle collecting was in the area of Fifteen Mile Creek. Several small, brown Elateridae were collected by Bob Bryant on foliage near the stream. A specimen of the beautiful little scarab, Euphoria fulgida (Fabricius), also was taken on one of the roads overlooking the creek. But the best Coleoptera collecting we did all day was at the remains of a deer carcass found lying along the roadside. There we found specimens of Trox suberosus Fabricius, a small Trogidae, as well as several large Staphylinidae. The suberosus were collected, but the staphylinids proved to be much too elusive for any of us to catch. The best individual beetle specimen was collected at this spot. There, feeding on the remains of the deer, Bob Bryant found a large, dark green Geotrupes spp. Although these beetles are primarily dung feeders, a great many of them feed on carrion.

Insects of other orders were seen along the way, but none of these were collected since nobody seemed interested in them. It is regretable that more people among our membership are not interested in Orthoptera, Diptera, Odonata, and some of the minor orders. Records of species in these groups would make our surveys of these areas more meaningful.

Perhaps, as our membership expands to take in people with other interests, we can report more complete lists of the insect fauna found at various habitats throughout the state. Such surveys could prove to be of true scientific value in the future.

Of course, the specimens that we collected were exciting and interesting. But some time should also be devoted to relating a somewhat different aspect of the trip. I am referring to the good time enjoyed by all. The good weather and pleasant surroundings added much to our enjoyment of the day. After all, what more could anyone ask for than good weather, beautiful countryside, excellent company, and an insect net? I sincerely hope to see YOU on our next Society sponsored collecting trip.

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THE CATOCALA MOTHS OF MARYLAND

Robert S. Bryant

Slightly over 100 species of the genus Catocala are recorded for the continental United States. They are popular with collectors because of their size, their cryptic markings and bright colors, and the ease with which most of them can be collected. Yet, anyone who has ever tried to look up the range extension of a particular species of Catocala, or a particular species of any other Lepidopteran for that matter, has discovered that Maryland is seldom included. Northern species are listed as extending south from the Maritime Provinces to New Jersey and Pennsylvania, and southern species are listed as extending north from the Gulf Coast and Florida to Virginia and West Virginia. With only a few exceptions, one might assume from the literature, that Maryland is a great void, that nothing much flies here or that insects in neighboring states can tell when they are passing over the Maryland boundary lines and suddenly execute a sharp U turn. In reality, however, Maryland occupies an enviable position geographically, and contains a rich mixture of both the northern and southern fauna. It is my intention to remedy this lack of information about Maryland's moths with a series of articles and annotated lists pertaining to the various families and genera found in the state.

Even though I have personally collected only a little over half of the species of Catocala that should eventually be found here, I feel it is important to start recording this data. The list below, incomplete as it is, is intended to give Maryland collectors a reference to check against when they discover a species they think may be new for the state. It is hoped that anyone finding a species not listed here will send the pertinent data to the editor of this journal for publication or communicate such data to me directly.

Pennsylvania claims 51 species of Catocala (Tietz, 1952) and New Jersey boasts 54 (Smith, 1909). I have recorded 29 for Maryland so far, mostly from the central portion of the state, but I am confident that since the foodplants for most of the northern species, as well as for most of the southern species, are found somewhere in Maryland we will eventually record between 50 and 60 species.

Catocalas may be caught in a variety of ways and in all parts of the state. I have taken them on the boardwalk in Ocean City, on Main Street in Westminster, and even in an alley in downtown Baltimore, as well as in more rural areas. They can be spotted resting on tree trunks and the sides of buildings in the daytime and they respond well to both ultra-violet light and bait, at night. Baiting, or "sugaring" as it

has come to be known, has been practiced since before the turn of the century. A more recent innovation, however, is the bait trap. Directions for making a fairly effective one may be obtained by consulting the Journal of the Lepidopterists' Society, Vol.23, No.2, pp.97-101.

There are almost as many bait formulas as there are collectors. The one I use consists of over-ripe bananas, mollasses, sugar and stale beer. Brandy or wine may be added to the basic fruit and sugar mixture but be sure to save some for yourself. A bait trail, a "black-light", a deck chair and a "chilled beaker of the grape" make for a pleasant way to spend a warm summer evening.

Catocala innubens Guenee -- Baltimore, Baltimore Co., 18-VII-66.
Catocala piatrix Grote -- Baltimore, Baltimore Co., 4-VIII to 14-X.
Catocala epione (Drury) -- Baltimore, Baltimore Co., 8 to 26-VII.
Catocala muliercula Guenee -- Ocean City, Worcester Co., 25-VII to 30-VIII.
Catocala flebilis Grote -- Baltimore, Baltimore Co., 17-VIII-66; Loch Raven, Baltimore Co., 2-VIII-71.
Catocala residua Grote -- Baltimore, Baltimore Co., 13-VIII-60.
Catocala retecta luctuosa Hulst -- Baltimore, Baltimore Co., 9 to 25-VIII.
Catocala ulalume Streker -- Baltimore, Baltimore Co., 27-VIII-60.
Catocala vidua (Abbot & Smith) -- Baltimore, Baltimore Co., 19-VIII to 1-IX.
Catocala maestosa (Hulst) -- Baltimore, Baltimore Co., 24-VII to 2-X.
Catocala lacrymosa Guenee -- Baltimore, Baltimore Co., 7-VIII-60.
Catocala paleogama Guenee -- (including forms annida & phalanga) -- Baltimore, Baltimore Co., 21-VII to 29-VIII.
Catocala subnata Grote -- Baltimore, Baltimore Co., 7 to 16-VIII-59.
Catocala neogama (Abbot & Smith) -- Baltimore, Baltimore Co., 11-VIII to 13-X; Woodbine, Howard Co., 21-IX-65; Finksburg, Carroll Co., 22-VIII-73; Ocean City, Worcester Co., 16-IX-72.
Catocala ilia (Cramer) -- (including forms conspicua, normani & satanas) - Baltimore, Baltimore Co., 3-VII to 6-IX; Stevenson, Baltimore Co., 3-VII-52; Reese, Carroll Co., 24-VII-71; Lexington Park, St. Mary's Co., 26-VI-76.
Catocala relicta Walker -- Baltimore, Baltimore Co., 15-VIII-60.
Catocala unijuga Walker -- Baltimore, Baltimore Co., 23-VIII-60.
Catocala parta Guenee -- Baltimore, Baltimore Co., 7-VII to 4-VIII.
Catocala cara Guenee -- Baltimore, Baltimore Co., 15 to 20-VIII; Hebbville, Baltimore Co., 27-IX-63; Rhode River, Anne Arundel Co., 4-IX-76, (form carissima).
Catocala concumbens Walker -- Little Savage Mt., Garrett Co., 24-VIII-70.
Catocala amatrix (Hubner) -- (including form selecta) -- Baltimore, Baltimore Co., 21-VIII to 18-IX; Lutherville, Baltimore Co., 20-VIII to 13-X; Magothy River, Anne Arundel Co., 28-VIII-71.
Catocala andromedae tristis Edwards -- Baltimore, Baltimore Co., 23-VII-65; Reese, Carroll Co., 28-VII-72.
Catocala coccinata Grote -- Baltimore, Baltimore Co., 30-VI-77.
Catocala ultronia (Hubner) -- (including forms lucinda & celia) -- Baltimore, Baltimore Co., 8-VII to 22-VIII; Severn River, Anne Arundel Co., 4-VII-72.
Catocala grynea (Cramer) -- Baltimore, Baltimore Co., 29-VI to 20-VII; Reese, Carroll Co., 24 & 28-VII.
Catocala blandula Hulst -- Reese, Carroll Co., 24-VII-71.
Catocala micronympha Guenee -- (including forms gisela & hero) -- Baltimore, Baltimore Co., 3-VII-66; Flintstone, Allegany Co., 13-VII-60.
Catocala connubialis Guenee -- Gwynn Oak, Baltimore Co., 19-VI-65; (form cordelia) Reese, Carroll Co., 18-VII-68.
Catocala amica (Hubner) -- Baltimore, Baltimore Co., 7 to 25-VII; Stevenson, Baltimore Co., 25-VII-65; Reese, Carroll Co., 18-VII to 12-VIII; Ft. Frederick, Washington Co., 30-VII-66.

(Entries in the above list, where no specific year is given, have been captured repeatedly in various years and only the first and last capture dates are recorded.)

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A REVIEW OF SWALLOWTAIL BUTTERFLY (PAPILIONIDAE) PARASITES OF THE GENUS TROGUS (HYMENOPTERA - ICHNEUMONIDAE)

Robert T. Mitchell

In the taxonomy of the genus Trogus, Heinrich (1962) includes five species: Trogus lapidator coerulator (Fabr.), T. pennator (Fabr.), T. flavipennis Cress., T. fulvipes Cress., and T. edwardsii Cress. According to Heinrich, Henry Townes believes "all American forms of this genus should be considered as representatives of a single species." Townes' hypothesis is based on the occurrence of specimens of Trogus taken where the ranges of pennator and fulvipes overlap that chromatically appear to be intergrades. Heinrich, however, recognizes consistent differences in the abdominal sculpture and pubescence between the brown pennator and black fulvipes and suggests that specimens appearing to be "intergrades" likely are either erythristic fulvipes or melanistic pennator.

Intergradation between T. pennator and T. fulvipes is suggestive of what was discovered to be true in the ichneumonid genus Acroricnus, wherein intergrades were found between A. junceus (Cress.) occurring in a range similar to that of T. pennator and A. aequatus (Say) occurring generally in the range of T. fulvipes. From a detailed study of Acroricnus (Mitchell 1950) I determined that all species of the North American mainland were subspecies of the Asiatic A. stylator (Thunb.). Because of this experience with Acroricnus I am undertaking a similar study of the genus Trogus, for which I am herewith soliciting help from insect collectors, curators of collections and rearers of swallowtail butterflies in North America. I would like particularly to be able to examine specimens of Trogus from the Canadian and Hudsonian life zones and from anywhere west of the 100th meridian.

Once closely observed, the wasp-like Trogus, 14-18 mm. (0.6-0.8 in.) long is easy to recognize with the naked eye. The abdominal segments are thickly edged and deeply cut, making the abdomen look somewhat like a series of rectangular blocks. Detailed illustrations of Trogus can be found in Heinrich (1962) and Hopper (1939). Currently recognized Nearctic species can be distinguished from the following key:

Key to Species of Trogus

1. Wings clear or yellowish, smoky at tip 2
   Wings uniformly deeply infuscated 3
2. Abdomen black, with bluish tint; head and thorax black; Femora and tibiae rufous .. lapidator coerulator (Fabr.)
   First two abdominal segments black, rest of abdomen yellow ..... flavipennis Cress.
3. Head, thorax, abdomen and legs uniformly light ferruginous ..... pennator (Fabr.)
   Thorax and/or abdomen partly to entirely black 4
4. Broad yellow ring around eyes; dorsum of thorax between wings never uniformly black; abdomen varying from entirely black (exceptional) to entirely ferruginous (exceptional) ..... edwardsii Cress.
   No yellow ring around eyes; thorax uniformly black; abdomen black with bluish tint, sometimes partly ferruginous ..... fulvipes Cress.

The known distribution of these species follows:

T. lapidator coerulator (Fabricius) - Yukon Territory
T. flavipennis Cresson - WY., UT., CO., AZ., NM.
T. pennator (Fabricius) - MA., NH. w. to ON., KS. and s. to FL., TX.; WA., OR., CA., NV.
T. edwardsii Cresson - WA., OR., ID., BC.
T. fulvipes Cresson - PQ. w. to BC. and s. to NY., MI., CO.

Trogus females lay eggs singly in swallowtail larvae, and the adult progeny emerge from the chrysalids (Mitchell & Zim 1977, p. 13). The different species are known to be parasitoids of the following swallowtails:

HOST SWALLOWTAIL SPECIES		PARASITOID TROGUS SPECIES
Papilio polyxenes Fabr.	Black Swallowtail	Trogus pennator
P. brevicauda Saunders	Short-tailed Sw.	T. pennator
P. zelicaon Lucas	Anise Swallowtail	T. pennator
P. machaon Linnaeus	Old-world Sw.	T. l. coerulator
P. glaucus Linnaeus	Tiger Swallowtail	T. pennator, T. fulvipes
P. rutulus Lucas	Western Tiger Sw.	T. pennator
P. eurymedon Lucas	Pale Swallowtail	T. pennator, T. fulvipes T. edwardsii
P. troilus Linnaeus	Spice-bush Sw.	T. pennator
Papilio sp.	?	T. flavipennis
Graphium marcellus (Cr.)	Zebra Swallowtail	T. pennator

The foregoing information reveals many gaps in our knowledge of the taxonomy and biology of these fairly common ichneumon-flies and the need for further research on them. Although field-collected intergrades offer substantial evidence of subspeciation, conclusive proof can be established by laboratory breeding, experimentation in which I expect to engage. For such research I hope that some readers will be able to provide me with some living specimens along with collected and reared material to study.

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RECORDS OF SOME BEETLES NOT GENERALLY KNOWN TO OCCUR IN MARYLAND

E. J. Ford and J. F. Cavey

Many of the beetles listed below were reported as new to Maryland in the Cooperative Plant Pest Report (CPPR) issued by Animal and Plant Health Inspection Service, U.S.D.A. Other species are reported here, as such, for the first time. It appears worthwhile to repeat some of this data as CPPR is primarily dedicated to nationwide reporting of economic insects and rarely reaches those interested in collection and classification of Maryland insects.

It should be understood that many common beetles are collected in Maryland that are not specifically reported in the literature as occuring in the state. Species listed here were chosen for reasons of scarcity, difficulty in identification, possible new host records, or extensions of their known distribution. All species listed below are in the collection of the senior author in Baltimore. Credit for identifi-

cation is given for all species except those determined by E. J. Ford.

SCARABAEIDAE

Phyllophaga aemula (Horn) -- Shad Landing State Park, Worcester Co., 14-VII-73, C. E. Miller, black light trap. Det. M. W. Sanderson.
Phyllophaga angulata Glasgow -- Hebbville, Baltimore Co., 15-VII-61, E. J. Ford, black light trap. Det. M. W. Sanderson.
Phyllophaga foxii Davis -- Shelltown, Somerset Co., 10-V-73, E.J. Ford, black light trap. Det. M. W. Sanderson. This collection represents a northern extension of the known range from Virginia to Maryland.
Phyllophaga knochi (Schoenherr & Gyllenhal) -- Martinak State Park, Caroline Co., 5-VI-67, E. J. Ford, black light trap. Det.M.W. Sanderson.

BUPRESTIDAE

Agrilus concinnus Horn -- Shelltown, Somerset Co., 13-VII-65, E.J. Ford, resting on bushes behind beach. Det. E. J. Ford, and confirmed by G. B. Vogt. A rare species previously known only from FL., TX., GA., and AR.

ELATERIDAE

Agriotes collaris LeConte -- Mount Backbone, Garrett Co., 7-VII-69, E.J. Ford, on flowers of Acer spicatum; Gorman, Garrett Co., 22-VI-74, E. J. Ford. This is a northern species previously known only south to Pennsylvania.

EUCNEMIDAE

Nematodes atropos Say -- near Butler, Baltimore Co., 23-VI-76, E.J. Ford, black light trap on recently felled Quercus sp. (oak). Det. T. J. Spilman and E. J. Ford.

ANOBIIDAE

Euceratocerus gibbifrons White -- Butler, Baltimore Co., 16 to 25-VI-76, black light trap on recently felled trees in woods. Det. E.J. Ford and confirmed by R. E. White. An uncommon species described in 1960 and previously known only from OH., GA., and SC., larva unknown.

TENEBRIONIDAE

Blaps lethifera Marsham -- Randallstown, Baltimore Co., 21-V-74, E. J. Ford, under old boards in horse stable. Det. T. J. Spilman. A European species first reported about 70 years ago in eastern U.S. Uncommon, but now known from NY., NJ., and VA.

Trachycelis flavipes Melshiemer -- Deal Island, Somerset Co., 30-VII-78, E. J. Ford, under board on beach. Det. T. J. Spilman. A southern species previously reported only as far north as Virginia.

RHIZOPHAGIDAE

Pycnotomina cavicolle (Horn) -- Leakin Park, Baltimore City, 17-V-76, J. F. Cavey, in sugar lure trap; Butler, Baltimore Co., 13-VI-76, E. J. Ford, in pine lure trap. Also known from PA., and NJ.

CHRYSOMELIDAE

Lexiphanes seminulum (Suffrian) -- Marion, Somerset Co., 15-VI-77, J.F. Cavey and E. J. Ford, sweeping. A southern species not previously reported north of North Carolina.
Hydrothassa vittata Olivier -- near Butler, Baltimore Co., 25-V-76, E.J. Ford, on Ranunculus repens. Det. R. E. White.
Pseudolampsis guttata (LeConte) -- Marion, Somerset Co., 5-VI-71, E. J. Ford, black light trap. Larva and host plants for this species are unknown. Localities previously reported for this alticine leaf beetle were Brazil, Uruguay, LA., AL., SC., FL., and GA.
Anisostena ariadne (Newman) -- Ward, Somerset Co., 14 to 22-VII-76, R.L. Davis and E. J. Ford, sweeping. Det. R. E. White. Larva and host plants for this leaf mining hispine beetle remain unknown. It has also been reported from NJ., FL., and SC.
Octotoma plicatula (Fabricius) -- Ward, Somerset Co., 14-VII-76, R. L. Davis and E. J. Ford, in leaves of Campsis radicans (trumpet vine).

Det. E. J. Ford and confirmed by R. E. White. Also reported from IL., IN., TX., FL., OH., and SC.

CURCULIONIDAE

Nanophyes watsoni (Blatchley) -- near Pocomoke City, Worcester Co., 27-V-63, E. J. Ford, on Arum sp. Det. R. E. Warner.

Eunyssobia echidna (LeConte) -- Butler, Baltimore Co., 27-VII-75, sugar lure trap, E. J. Ford; Leakin Park, Baltimore City, 1-VI-77 to 7-IX-77, J. F. Cavey and E. J. Ford, numerous on recently felled Fagus grandifolia (American beech). Det. R. E. Warner. Larva of this beetle unknown. Other distribution records include IA., OH., IN., and KY.

Cylindrocopturus adspersus (LeConte) -- Canton area, Baltimore City, August to September, 1962 to 1973, E. J. Ford and C. E. Miller, bred from Helianthus annuus (wild sunflower). Det. R. E. Warner. Previously known only west of the Mississippi River.

Rhynchus apiculatus (Gyllenhal) -- Shelltown, Somerset Co., 4-VI-71, E. J. Ford, bred from Myrica cerifera (candleberry). This wood boring weevil is a southern species known from FL., VA., and SC.

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OVIPOSITION SITE SELECTION AND BEHAVIOR IN LIMENITIS SPP.

Austin P. Platt

While on sabbatical leave from the University of Maryland Baltimore County (U.M.B.C.) between January and June 1976, I studied with the late Professor Philip M. Sheppard, F.R.S., then Chairman of the Department of Genetics at the University of Liverpool in England. During that time I reared several generations of Limenitis archippus (Cramer), L. arthemis arthemis (Drury), and L. arthemis astyanax (Fabricius) on potted cuttings of weeping willow (Salix babylonica Linneaus) grown for me at the nearby Ness Gardens, that is affiliated with the University. Diapausing larval stocks had been obtained from the U.M.B.C. campus in Catonsville (Baltimore County) and from Shutesbury (Franklin County), Massachusetts, in hibernacula, prior to my departure for England. The Maryland larvae were wild-collected stocks, whereas those from Shutesbury, Massachusetts had been reared from eggs obtained from a wild-collected arthemis - astyanax intergrade female and were mailed to me by Mr. Jonathan Frey of South Amherst, Massachusetts. The Maryland

hibernacula of archippus were collected exclusively on crack willow (Salix fragilis L.), and those of astyanax were found on black cherry (Prunus serotina Ehrh.), upon which the Massachusetts arthemis - astyanax intergrade larvae also had been reared.

During April and May 1976 a limited number of adults of both archippus and arthemis - astyanax (including their intergrade form proserpina Edwards) were released into one of the larger greenhouses located on top of the Nuffield Building at the University where Professors Sheppard and Sir Cyril A. Clark, F.R.S., maintain various Rhopaloceran stocks, including Heliconius spp., several races of Hypolimnas bolina (Linneaus), and Papilio spp., for genetic research purposes. Several dozen Limenitis butterflies were released in the greenhouse over a six week period. Some, but not all, of the females had been hand-paired prior to their release. Only two natural matings were observed to have taken place in the greenhouse during this time, one each for L. archippus and L. arthemis - astyanax. However, the oviposition behavior of both species was closely observed, and may be of interest to those who rear Lepidoptera.

The greenhouse was filled with a variety of large tropical plants, including Asclepias spp., Passiflora spp., Lantana vines, and probably many other plants as well. Into this maze of tropical greenery were placed three five-inch pots of moderate-sized weeping willow plants, one pot per table along each of three sides of the greenhouse. Limenitis females successfully located these plants and oviposited only on the willow leaves. At first eggs were laid only on the very upper leaf tips, one egg per leaf. Eventually, however, nearly all of the leaves (at least those in favored locations) were filled with single eggs, after which eggs were placed along both leaf margins, often nearly adjoining one-another, thus forming neat rows along both leaf edges. Finally, eggs were deposited on the undersides of the leaves as well.

The behavior of the females of both species in locating the willow plants was similar and seems to involve chemosensory mechanisms. Individual females, while ovipositing, were observed to flit around the house in a hovering fashion, more or less at random, before alighting on a leaf. Immediately after alighting, the females of these nymphaline species "drum" vigorously on the leaf surface with their reduced foretarsi. They next uncoil the feeding tongue and daub the sensory tip against the leaf surface in the exact region where the drumming has just occurred. If the leaf is not a willow leaf, the females retract their tongues and again take to the air. If, however, a female has (by chance) alighted on a willow leaf, the "tasting" with the proboscis tip is followed by orienting the body parallel to the long axis of the leaf, with the female's head pointing toward the leaf base. Then, keeping the ovipositor in contact with the leaf surface, the female backs down the leaf until she reaches the very tip of it, where oviposition of a single egg rapidly occurs. On leaves where eggs have been placed previously, the backing down halts when the abdominal tip comes into contact with the egg (or eggs) already attached to the leaf.

Similar drumming behavior associated with oviposition has been observed in several other nymphalid species. Particularly well studied has been the oviposition behavior of Chlosyne lacinia Geyer (Calvert and Hanson, pers. comm.). However, the subsequent behavioral sequence of "tasting" the drummed leaf region with the proboscis tip, represents a new observation, as far as I know. It is very likely that the drumming activity of the foretarsi scratches or wounds the leaf surface with the tarsal claws preparatory to "tasting" the leaf sap with the feeding tongue. Such a food plant locating behavioral sequence may be very widespread among the Nymphalidae, because most species possess reduced foretarsi. The ability of adult female butterflies to respond to such chemosensory plant cues and to select exclusively species of one plant genus for oviposition must depend upon the recognition of certain familiar plant chemicals. This behavior probably has a genetic basis.

I am grateful to the members and associates of the Department of Genetics at the University of Liverpool (including Mr. P. Brakefield, Mrs. Claire Sharrock, Dr. A. Smith, and Mrs. Angela Urion) for assistance with insect rearing and, especially, to Professors Sir C.A. Clarke, F.R.S., and P.M. Sheppard, F.R.S., for the use of their excellent insect facilities. I thank Mr. J. Frey of Southern Amherst, Massachusetts and Mr. S. Harrison of U.M.B.C. for help in securing the insect stocks. Dr. F.E. Hanson of the U.M.B.C. Department of Biological Sciences provided valuable comments on the manuscript.

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AN UNUSUAL ABERRATION OF ANTHERAEA POLYPHEMUS (LEPIDOPTERA - SATURNIIDAE)

Robert S. Bryant

From time to time, collectors of Lepidoptera encounter specimens which deviate from the normal insect to such an extent that the observer can scarcely believe what he is seeing. These odd creatures fall into several recognized categories such as melanics, mosaics, gynandromorphs, and specimens which had some pupal or developmental defect. The latter category includes specimens with a wide range of deformities, from parts that are reduced in size, abnormally shaped, or larval heads that endure into the adult stage (News of the Lepid. Soc., No. 6, Nov./Dec. 1978) to parts such as eyes, antennae, legs or even wings (A. P. Platt, pers. comm.) that are completely missing. But perhaps the rarest and most unusual group of all are those few specimens that have turned up possessing more than the usual complement of anatomical parts.

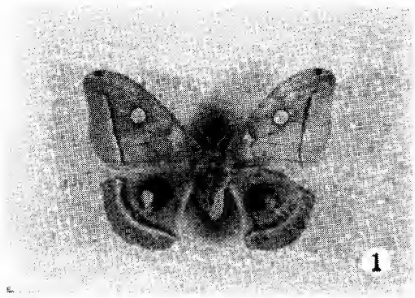
This phenomenon first came to my attention through an artical in the Journal of the Lepidopterists' Society (Vol.14, No.2) by Julian N. Jumalon entitled "Notes on Siamese Twins of Parthenos (Nymphalidae)." Mr. Jumalon described a wild caught specimen of Parthenos salentia Hopffer, taken near Cebu City, Philippines, which had two normal bodies with their usual complements of antennae and legs, but each body possessed only one fore- and one hind-wing, both of normal size. The bodies were joined by the sides of the thoraxes. Since the figure given was a sketch and not a photograph, I was somewhat skeptical as to the existence of an authentic specimen of this sort.

On June 26, 1964, a female Antheraea polyphemus Cramer emerged from one of a series of cocoons that I had reared the previous summer. At first glance the moth appeared to be deformed, as often happens with moths that have been reared in captivity, and little attention was paid to it. Since others were emerging in the cage, I did not wish to disturb them. When I checked again, later in the day, the female's wings had expanded almost normally except that the pupal skin was adhering to "something" between the fore-wings. Upon removing the pupal skin, I discovered that the "something" was a fifth wing, unfortunately shriveled and by then quite dry. If I had removed the pupal skin when the moth first emerged, the fifth wing might have expanded normally.

The female could not fly due to the extra crumpled wing. However, on June 28, she mated normally with a wild male. It was hoped that the offspring could be reared and that even more unusual qualities would be possessed by some. However, the eggs proved to be infertile.

The moth had been reared on cut branches of Norway maple, Acer platanoides L. The larva had appeared to be normal. The cocoon was constructed normally, although it was slightly smaller than those collected in the wild, as is often the case with reared specimens. Unfortunately the pupal skin was destroyed in removing it, and was discarded.

The accompanying photographs should help to illustrate the location of the fifth wing, for those who, like myself, would tend to be skeptical of the existence of such a creature. The specimen is slightly rubbed due to the fact that it was allowed to remain free for several days during mating and oviposition.



Figs. 1-2. Antheraea polyphemus Cramer. 1) Dorsal view of female showing attachment of crumpled fifth wing at mid-thorax. 2) Frontal view of same specimen.

In the years since my experience with the polyphemus, I have heard of one other five-winged Lepidopteran. Mr. Franklin H. Chermock (pers. comm.) mentioned having a western lycaenid (blue) butterfly with five nearly perfect wings, but unfortunately I never got to see the specimen. I hope that other collectors and breeders who have, or have seen similar oddities will communicate with me or publish their information.

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Jumalon, Julian N. 1960. Notes on Siamese Twins of Parthenos (Nymphalidae). Journal of the Lepidopterists' Society. Vol.14 No.2 pp.155

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ARE BUTTERFLIES USEFUL?

We all like to watch the butterflies
As up they go and soar 'round the skies.
They come in all colors, brown, blue and white,
And they usually sleep all through the night.
To look pretty is their purpose in life,
Very much like a rich man's wife.

Albert D. Maizels, D.D.S., 1835 Eye St., N.W., Washington, D.C. 20006

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BOOK REVIEW

THE ILLUSTRATED ENCYCLOPEDIA OF BUTTERFLIES & MOTHS, by Dr. V.J. Staněk. 1977. Octopus Books Ltd., 59 Grosvenor St., London W1. 352 pp., illus. + 426 photographs (210 in color). Price: $8.50 (U.S.)

Another in the spate of books, dealing with the Lepidoptera, published in Europe and aimed at the general public has recently hit the American market. Like many of its predecessors, the title is misleading. While it does mention most of the families of the butterflies and macro-moths, it only gives a thumb-nail sketch of each, and could hardly be considered an encyclopedic treatment of any one of them. The micro-moths receive even less coverage, being represented by only a few of the large and/or colorful species.

I realize that in order for a book to sell it must attract the attention of the passer-by, but it is unfortunate that attracting attention translates into a presentation of the most egregious, garish and gaudy examples that the topic has to offer. There are legions of small, plain or drab moths and butterflies whose stories are never told simply because they lack flamboyance.

If you are a devoté of the ostentatious, or interested in rearing, then you will want this book for your personal library. The photography is excellent. Many subjects are photographed from life and there are two particularly outstanding sequences depicting various stages in the metamorphosis of Brahmaea wallichii Gray and Acherontia atropos L. Some biological data is given for most species including foodplants and helpful tips on rearing.

While this book will be most useful to the tyro, even experienced collectors and breeders should find a few areas of interest, and its moderate price may cause dealers supplies to dwindle rapidly.

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CORRIGENDA

In the last issue of the Maryland Entomologist (Vol.1, No.2, p.1) it was recorded that the state of Kentucky had tried unsuccessfully to get Speyeria diana passed through the legislature as their official state insect. This was incorrect and the entry should read - Tried unsuccessfully to get the monarch butterfly (Danaus plexippus L.) passed through legislature. The editor was solely responsible for this error and not Mr. Fales. Please excuse the faux pas.

The Maryland Entomologist is published irregularly by the Maryland Entomological Society. Original articles on geographic and temporal distribution, particularly pertaining to Maryland and adjacent states, ecology, biology, morphology, genetics, systematics, behavior, etc. are welcome. Book notices and reviews, news of the members, requests for information, notes on distribution, occurrence, migration and others will be published. All articles are subject to editorial review and acceptance. They should be sent to Robert S. Bryant, 522 Old Orchard Road, Baltimore, Maryland 21229.

This publication will reflect the interests, views, and talents of the entire membership. It will be viable as long as everyone views his contributions as necessary and meaningful for its continuance.

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NOTICE TO CONTRIBUTORS

Contributors should prepare manuscripts according to the following instructions.

Text: Manuscripts submitted for publication in the Maryland Entomologist must be typewritten, entirely double-spaced, on one side only of 8¼ X 11 inch typing paper. The first mention of a plant or animal in the text should include the full scientific name, with authors of zoological names. Underline only where italics are intended.

Literature Cited: References in the text to articles or books should be given as, Villiard (1964) or (Villiard, 1964, 1969) and all must be listed alphabetically under the heading LITERATURE CITED, as follows:

Villiard, P., 1964. Multicolored World of Caterpillars. Natural History Vol.LXXIII No.4 p.24-31

_____. 1969. Moths and How to Rear Them. Funk & Wagnalls, New York. 235pp.

Additional references that may be helpful to the reader should be listed under the heading SELECTED REFERENCES, in the above manner.

Tables: Tables, graphs and line drawings should be done with indelible, black ink and should be placed on separate sheets, following the main text, with the approximate desired position indicated in the text.

Illustrations: Photographs may be accepted if they are necessary to support the text. Reproduction of photographs may increase the printing cost and authors should expect to pay any extra charges. Photographs should be approximately 2½ X 3½ inches (wallet size), black and white, glossy finish and mounted with frosted tape to an extra sheet of paper. Figure numbers, as cited in the text, and figure legends should be typewritten below each photograph.

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Raymond B. Nagle - 1975
William A. Andersen - 1975-1977
Robert T. Mitchell - 1977-1978

CONTENTS

The 1977 Field Trip of the Maryland Entomological Society
by Philip J. Kean 1

The Catocala Moths of Maryland
by Robert S. Bryant 4

A Review of Swallowtail Butterfly (Papilionidae) Parasites of the Genus Trogus (Hymenoptera - Ichneumonidae)
by Robert T. Mitchell 6

Records of Some Beetles Not Generally Known to Occur in Maryland
by E.J. Ford and J.F. Cavey 7

Oviposition Site Selection and Behavior in Limenitis spp.
by Austin P. Platt 9

An Unusual Aberration of Antheraea polyphemus (Lepidoptera - Saturniidae)
by Robert S. Bryant 11

Are Butterflies Useful?
by Albert D. Maizels, D.D.S. 12

Book Review
by R.S. Bryant 12

Corrigenda 12